ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

DEPARTMENT OF EMERGENCY MEDICINE AND CRITICAL CARE

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF HEALTH PROFESSIONALS WORKING AT THE EMERGENCY UNITS TOWARDS DISASTER AND EMERGENCY PREPAREDNESS AT ADDIS ABABA HEALTH BUREAU ADMINISTERED PUBLIC HOSPITALS, ADDIS ABABA, ETHIOPIA 2020.

BY: Melkie Ambaw

A THESIS RESULT TO BE SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, DEPARTMENT OF EMERGENCY MEDICINE AND CRITICAL CARE FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS DEGREE FOR MASTER'S SCIENCE IN EMERGENCY MEDICINE AND CRITICAL CARE NURSING.

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This is to certify that the thesis entitled "Assessment of knowledge, attitude, and practice of health professionals working at emergency units towards disaster and emergency preparedness at Addis Ababa health bureau administered public hospitals, Addis Ababa, Ethiopia 2020..'' is submitted in partial fulfillment of the MSc with specialization in "Emergency medicine and critical care nursing" to the Graduate Program of the College of Health Sciences of Addis Ababa University and has done by Melkie Ambaw ID No: GSR/2196/11 under my supervision. Therefore, I recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the Department.

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Declaration

I hereby declare that this MSc thesis is my original work and has not been presented for a degree in any other university and all sources of material used for this thesis have been duly acknowledged.

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ABBREVIATION

AA-Addis Ababa

AAHB-Addis Ababa health Bureau

AFRO –Africa Region Office

AOR-Adjusted Odd Ratio

BSC- Bachelor of Science

COR-Crude Odd Ratio

DRR-Disaster risk reduction

EPIQ-Emergency Preparedness Information Question

EUHP-Emergency unit Health Professional

HP-Health Professional

ISDR-International Strategy for Disaster Reduction

KAP- Knowledge, Attitude, and Practice

MSC- Master of Science

MIIMH-Minlik II Memorial referral Hospital

PI-Principal Investigator

SD-Standard Deviation

SPSS-statistical package social science

TASH- Tikur Anbesa Specialized Hospital

UNDRR-United Nation Disaster Risk Reduction

WHO- World Health Organization

Y12MCH-Yekatit 12 Medical College Hospital

ZMH-Zewuditu Memorial referral Hospital

ABSTRACT

Background: Disaster is a serious public health issue nowadays which can happen at any given instant and cause loss of many lives. Hence, the emergency room is at the forefront of the response system and serving as the gateway to the most appropriate care of victims. Health professionals who are working at the emergency department have an upfront role in calamity responses to disaster victims. Adequate competencies of health professionals to handle a disastrous event are important to care victims.

Objective: The objective of the study is to assess the knowledge, attitude, and practice of health professionals working at the emergency unit towards disaster, and emergency preparedness at Addis Ababa health bureau administered public hospitals, Addis Ababa,2020.

Method: Cross-sectional study design was employed and three public hospitals randomly selected from six Addis Ababa health bureau administered public hospitals. A total of 225 health professionals who are working at the emergency unit of the selected hospitals participated in the study making the response rate of 96.2%, and data was collected using a self-administered questioner. Data were checked for completeness, cleanness, and entered into EPI-data version 4.6.2.,and exported to SPSS version 23 for analysis. Bivariate and multivariate analysis was employed.

Results: The majority of the respondents 118(52.4%) were nurses and followed by physicians which were 63(18%). A significant proportion (34.7%) of the respondents did not know their hospitals had a disaster plan. They have poor knowledge (52%), positive attitude (55.1%), and inadequate practice (56.4%).Age category of the participant had influence level of knowledge and level of attitude at p-value<0.05.

Conclusion and recommendation: Although the poor knowledge and inadequate practice of respondents about disaster/emergency preparedness; health professionals had a positive attitude towards disaster and emergency preparedness. Hospitals should build the capacity of health professionals who are working at an emergency unit towards disaster and emergency preparedness.

Keywords: Disaster, Emergency Preparedness, Ethiopia

1. Introduction

1.1 Background

The World Health Organization defines a disaster as'' an occurrence of distracting the normal situations of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community'' (1).

Disasters can be divided into three categories; natural events (such as storms, drought, earthquakes, disease epidemic), technological events (such as explosions, structure collapse, radiological accidents), and civil/political events(such as strikes, terrorism, biological warfare) (2).

As human beings, God has granted us power over animals, and the earth, so we choose to live and survive, even though there are disruptions caused by disasters. Natural hazards are part of our lives, and it will surely cause destruction and will not ask for permission to occur in a particular area. It is with this in mind that disaster risk reduction measures should be put in place to help communities cope and minimize the impact of disasters (3).

The disaster management cycles are made up of four phases which are: mitigation, preparedness, response, and recovery (4). Mitigation includes any activity taken to prevent the occurrence of the disaster whenever possible. The response phase is the point at which actions are started to save lives, property, and the environment and to prevent secondary harm. During the recovery phase efforts are started to restore the community to normal conditions after a disaster (5).

Preparedness is defined as all the activities, and measures taken in advance of an event to ensure an effective and coordinated response to the effects of the hazards. Disaster preparedness is very much important to minimize the damaging effects of disasters and emergencies. Emergency preparedness is defined as appropriate knowledge, skills, and action which are required to respond and ready for a threat which may be actual and suspicious. Emergency preparedness can be accomplished through a process of planning and formulating policies; training and exercise; acquisition of important equipment and infrastructure needed for emergency response; and the acquisition and improvement of the knowledge and capabilities of staff (6–8).

With the increasing threat of a disaster global pandemic, many public, private, state, and local organizations have begun to develop some form of preparedness and response plans. Among those in the front lines of preparedness are hospitals and medical professions who will be among the first responders in the event of such a disaster. Emergency department(ED) physicians were found to be highly knowledgeable in nearly all medical and logistical aspects of the response to different bioterrorist threats (9,10).

At the end of the 20th century, national thinking about emergency preparedness led to the identification of the key competencies needed for effective emergency response and increased attention to planning for and practicing emergency response. The advent of disasters has required health institutions to have comprehensive emergency management providers. Therefore, the health professionals at the emergency department (ED) in hospitals should be adequately trained, equipped with essential knowledge, skills, experience and prepared to provide for an effective, efficient response and help in reducing the number of potential fatalities during chaotic circumstances accompanying a disaster (11).

Natural disasters and man-made disasters are quite common prevailing in Ethiopia mainly due to drought, floods, landslides, earthquakes, volcanic eruptions, and disease epidemics(12).

In the last four years in Ethiopia, there have been civil unrest, conflicts, landslides (such as koshe), etc., are occurred where the casualties were all rushed to major health facilities like Addis Ababa health bureau administered public hospitals. So disastrous event has required hospitals to have comprehensive emergency management providers.

Generally, disasters that have happened all over the world serve as reminders that we live in a world full of hazards, and we do not know when a disaster will occur, but we do know there will be natural and man-made crises happen in this year. We know there will be mental health problems in accident survivors, and the caregivers who respond to their needs, as well as the victims will seek life-saving care, comfort, and relief at hospitals (13).

1.2. Statement of the Problem

Disasters hit every part of the globe causing deaths and lost trillions of dollars in related damages. Disaster frequently attacks developing countries with weak public health infrastructure, inadequate health personnel's competencies, and often results in a severe consequence loss, serious environmental disruption, and lasting psychological impairment to the survivors than developed ones (14–16).

Health professionals (HPs) always need to be stood by to disaster because threats are unpredictable. When it occurs, there is a loss of life and victims will require medical attention. Various reviews indicated that health professionals' have inadequate competencies in disaster preparedness that lead to adverse consequences for patients. Some studies in Ethiopia so far have critically reviewed medical responses to disasters and little information exists about the initiatives being undertaken by the health sector from the perspective of the basic disaster management cycle (12,17).

In Tikur Anbesa Specialized Hospital(TASH), disaster preparedness of health care workers 49.2% had low knowledge, 91.7% had inadequate practice and 35.2% had unfavorable attitudes, and also the country's health policy has given insufficient attention to the hospital (18).

In Ethiopia, particularly in Addis Ababa, there is a series of the public gathered in many sites or services throughout the year such as in public holiday celebration areas during an epiphany, Ramadan, etc., in train services, in universities/colleges, in industries, and in construction activities. Hence, the issue of disaster is serious in this study area. To the knowledge of the principal investigator (PI), there is little to no documented studies on HPs working at the emergency unit KAP towards a disaster and emergency preparedness in Addis Ababa health bureau administration public hospitals. Thus, this initiated the PI to research KAP of health professionals working at the emergency unit under the Addis Ababa health bureau administered public hospitals.

1.3. Significance of the Study

Due to the unpredictability of timing and place of disaster occurrence, health professionals who are working in the emergency unit should be always prepared for disaster and emergency. Therefore, this research result provides information about the knowledge, attitude, and practice of health professionals working at the emergency unit towards disaster and emergency preparedness in Addis Ababa health bureau administered public hospitals. The study result identifies the weakness, and strength of health professionals who are working at the emergency unit towards a disaster and emergency preparedness. It helps if any health professionals recognize a lack of knowledge, deficit practice, and unfavorable attitude in disaster, and emergency preparedness. This would hopefully initiate their inner drive to become competent health care providers by wanting to commit to change their knowledge, attitude, and practice base of disaster, and emergency preparedness. The research result would initiate the hospitals and health bureau to facilitate interventions to health professionals on identified weaknesses. The study would also alarm hospitals' to perform drill on disaster management plans on their health professionals working at the emergency unit. As a result, this helps to enhance knowledge, practice, and a favorable attitude of health professionals to disaster/emergency preparedness.

The study would also increase literature on disaster and emergency preparedness. Furthermore, it serves as a base for other researchers, policymakers, education curricula, both governmental and non-governmental organizations, and for those who want to interfere in the hospitals as well as it will add value to the implementation of the Ethiopian disaster management vision of 2023 (19).

2. Literature review

2.1. Overview of disaster and emergency preparedness

Disaster losses have shown an increasing trend over the past decade in the world. The world disaster statistics form 2000-2006, $235 billion, and 130,000 lives lost. In 2007 a 60% increase in disasters, deaths grew from 600,000 to over 1.2 million, in (1997–2006) above the previous period (1987_ 1996) (20,21). From 2000-2009, an average of some 270 million people yearly was affected by natural as well as industrial catastrophes, and above 1.1 million deaths were recorded in large-scale non-man made adversities. In the year 2011 alone, more than 30,773 people died, above 244.7 million others were affected and caused an estimated US$ 366.1 billion economic damages. World disasters report 2015 had reported 317 non-man-made disasters worldwide in 2014, and affecting 94 countries (22,23).

The problem by far troubling in Africa because each year nations in the continent are at increased risk as they are facing an ever-growing assortment of hazards more than other continents. Financially, Africa lost USD$ 15 billion due to emergencies and disasters, in 2007 alone (24).

A global survey conducted by the WHO found that most countries lacked trained human resources in adversities as well as in emergencies, but a number of emergency cases at the causality unit have increased (30%) visitation each year in all world hospitals emergency rooms. An integrative review in 2017, indicated that the knowledge or skills required for disasters management may be inadequate (25–27).

The study was done in northern Namibian hospital on a disaster, and emergency preparedness of the health care workers had poor knowledge regarding emergency and disaster preparedness while 85.7% had no training related to disaster preparedness and most health care workers are not aware of disaster plans. This gap also parallels to Nigeria's health care workers (28,29).

WHO/AFRO noted that a number of sub-Saharan African countries in the region had not comprehensive emergency preparedness plans because most health care practitioners lacked the knowledge plus management skills to deal with disasters (30,31).

Research done in southwest Ethiopia showed that 48.1% of health professionals had poor knowledge regarding the preparedness of disaster. Another study was done at Tikur Anbesa Specialized hospital on disaster preparedness of health care works shows that 49.2%of respondents had low knowledge, 91.7% had inadequate practice and 35.2%had unfavorable attitudes, and also the country health policy has given insufficient attention to the hospital (16,18).

Nowadays, a marked shift is being made on the way emergencies are managed. In the past times, more emphasis was on humanitarian response, the way emergencies are managed as well as relief activities than on strategies and actions to mitigate the effects of disasters on communities to preserve lives and assets (26).

2.2. Knowledge of health professionals towards disaster, and emergency preparedness

In research done in Pakistan in 2017, on emergency department staff knowledge of emergency and disaster preparedness showed that the overall knowledge of the participants was good (65.4%). Further more, the research results showed that 37.8% of participants knew about where to find the disaster plan, while the rest didn't know about it. The study revealed that the experience and knowledge had a significant association at p-value=0 .014 (7).

Another research done in central Saudi Arabia emergency department health professionals had a satisfactory level of knowledge on disaster/emergency preparedness(32).

The study conducted in South Africa at the Johannesburg hospital revealed that health care workers regarding disaster preparedness 92% knew what a disaster is,76% of respondents knew where to find the disaster plan is, whereas 62.5% knew what disaster preparedness is (33). In Nigeria 2016, research done in emergency health professionals, there was a statistically significant association (P = 0.021) between the staff profession and the knowledge of emergency preparedness (29).

A study done on nurses 'who were working at emergency unit KAP towards mass causality preparedness at one referral hospital in Rwanda showed that there was a significant relationship between the level of practice and objectively assessed knowledge (at P<0.001)(34).

A cross-sectional descriptive study conducted in Tikur Anbesa specialized hospital health care workers towards disaster preparedness result revealed that about half 117(50.8%) of health care workers at the hospital had good knowledge about hospital disaster preparedness and its plan, the remaining 113(49.2%) had low knowledge. Around two-thirds of the participants mentioned that they knew the term disaster while 13.7% of them did not know it. (18).

2.2.1 Health professionals familiarity levels towards emergency preparedness information question (EPIQ)

Quantitative cross-sectional descriptive research conducted in Saudi Arabia in 2014, on nurses KAP and familiarity regarding the disaster, and emergency preparedness result showed that familiarity to emergency

preparedness responses rate is ranged from extremely familiar, and aware neutral respectively as follows; for emergency preparedness terms & activities existed (37.2, and 18.3 %), for the incident command system and role within it (27.8, and 17.8%), for ethical issues in triage, (42.5, and 16.7%), for epidemiology and surveillance (33.0, and 21.4%), for isolation/quarantine (43.7, and 18.7%), for cleansing (43.7, and 13.1%), for communication/connectivity (31.3, and 20.6%), for psychological issues (36.5, and 19.8%), for special populations (27.7, and 18.3%), for the accessing critical resources responses ranges (24.6, and 25.4 %), and for overall familiarity (25.4, and 27.0 %). The mean score was (2.87± 0.84), with a highly significant difference was found as (t 54.168 & P≤0.000) (35).

Across-sectional descriptive research done in 2011, Northern Kentucky university hospital emergency preparedness on emergency staff the participants' familiarity with EPIQ result showed as the following; overall familiarity with response preparedness in the case of a large-scale emergency event very aware was 7.5%, and not familiar was 5%. In case of accessing critical resources very familiar was 10.5%, and not aware was 19.5%. While towards special populations very familiar was 17.5%, and not aware was 2.5%. In the case of psychological issues very aware was 13.3%, and 3.3% of respondents not familiar. While towards communication/connectivity very familiar was 13.9%, and not aware was 13.2%. In case of decontamination very familiar was 28.3%, and not familiar was 6.7%, in case of isolation very familiar was 17.5%, and not aware was 11.5%, in case of epidemiology and surveillance very familiar was 6.5%, and not aware was 24.5%, in case of detection of and response to an event very aware 13.3%, and not aware was 10.7% (3).

2.3 The attitude of health professionals towards the disaster, and emergency preparedness

The cross-sectional study was done on nurses disaster preparedness in Saudi Arabia in 2014, results revealed that regarding disaster preparedness attitudes of the study participants which were as following; 83.7% of respondents training was necessary for all health care management, 73.4% of respondents disaster plans need to be regularly updated, 73.4% of respondents disaster simulations should occur frequently in the hospital. Another research was done in Central Saudi Arabia in 2018 in emergency staff participants' had a favorable attitude regarding the disaster, and emergency preparedness (32,35).

A study done in Malaysia showed that the highest percentage of health professionals who had a negative attitude regarding disaster management plan had unsatisfactory awareness, and the relation was statistically significant (36).

A study was done in South Africa at the Johannesburg hospital health care workers regarding disaster preparedness revealed that the participant's attitude towards disaster preparedness was 79.2% of participants disagreed that disasters were unlikely to happen in their hospital. (33).

A qualitative-quantitative cross-sectional descriptive study conducted in Tikur Anbesa specialized hospital Addis Ababa, Ethiopia in 2016 health care workers on disaster preparedness result revealed that a majority of respondents (64.8%) had a favorable attitude. The attitude of respondents on vulnerability assessment at the hospital 69.1% of respondents strongly agreed, and 0.4% of respondents strongly disagreed. This study also showed that 58.7% of the respondents would be willing to report for a call in times when the hospital encounters mass casualty as a result of the emergencies. From this research result lack of knowledge, the hospital might not care for them, and frustration of disaster was the common reason for unwillingness (18).

2.4 Practices of health professionals on the disaster, and emergency preparedness

In Central Saudi Arabia, in 2018 research result shows that in causality personnel's most of the participants 153 (81%) reported the conduct of disaster drills at their hospital and nearly 66.7% revealed that the periodic update of the emergency operational (disaster) plan. Additionally, slightly over 2/3rds of the participants involved on the ongoing training towards disaster, and emergency preparedness. Another cross-sectional a descriptive study done in Pakistan 2017 which showed that nurses practice towards disaster, and emergency preparedness was not good. Moreover, 9% done disaster drills,4.5% done ongoing training, and 11.5% of respondents participated during the update of the disaster plan in their hospitals (7,32).

A study done on Chinese health professionals result indicated that to manage mass casualties well, nurses need a minimal of 3 years of working experience and enhance nurses' practices in mass casualty care (37).

Across-sectional study done in two hospitals of Nigeria in 2016, on KAP of emergency health care workers towards emergency preparedness,72 (35.1%) of the respondents done emergency drills in their respective hospitals. Another research is done in a Johannesburg hospital in South Africa,2011 on health care workers KAP of disaster preparedness showed that 70.2% of respondents practice emergency drills (29,33).

A study conducted in National Kenyatta hospital, 2015 showed that the majority of the respondents were young, their practice of disaster preparedness was found to be associated with work experience at p-value<0.05. Also, the study found out that there was a relationship between the level of education attained by the staff, the age category of the staff, and the level of knowledge on disaster /emergency preparedness (38).

Across-sectional descriptive study conducted in Tikur Anbesa specialized hospital, Ethiopia on health care workers generally showed that low practice of disaster preparedness(8.3%) towards disaster preparedness. 12.6% of the respondent said that the hospital had conducted workshops/training,while 34.6% of participant the hospital had not conducted workshops/training (18).

Research done by Abdelazeem reflects there is a need that all workers at the hospital knowledge of the disaster management plans and its contents to fully equip them with the necessary knowledge and skills to effectively manage a disaster (5)

The research was done in Tikur Anbesa specialized hospital on health care workers Addis Ababa, Ethiopia revealed that the hospital had neither disaster preparedness plan nor other forms of activities and preparations for the occurrence of adversities, and also state health policy had not given adequate consideration to hospital disaster preparedness (18).

Generally, different research results showed that disaster/emergency may occur in an unexpected condition due to which the victims would become to the emergency department. However, different reviews showed that health professionals had inadequate comprehensive competencies to efficiently and effectively manage their worsen outcomes.

3. Objective

3.1 General Objectives

To assess knowledge, attitude, and practice of health professionals working at emergency unit towards disaster, and emergency preparedness at Addis Ababa health bureau administration public hospitals, Addis Ababa, Ethiopia from April 13-June,2020.

3.2. Specific Objectives

1. To assess knowledge of disaster, and emergency preparedness of emergency unit health professionals at Addis Ababa health bureau administration public hospitals.
2. To assess the attitude of emergency unit health professionals regarding disaster and emergency preparedness at Addis Ababa health bureau administration public hospitals.
3. To assess practices of disaster and emergency preparedness of emergency unit health professionals at Addis Ababa health bureau administration public hospitals.

4. Methodology

4.1. Study design

The cross-sectional study design was conducted to meet the study objectives (KAP) of health professionals working at the emergency unit.

4.2 Study area

The study was conducted at the emergency department of Addis Ababa health bureau administered public hospitals from March 25-June,2020. The emergency department is specifically chosen because it is a department that deals with any emergencies.

Addis Ababa is the capital city of Ethiopia and a seat for the Africa Union. It is the largest city in Ethiopia, with a population of 3,475,952 according to the latest (2007) population census with an annual growth rate of 2.7%. People from different regions of Ethiopia populate the city (39).

Six public hospitals were administered under the Addis Ababa health bureau. Out of these Zewuditu memorial hospitals, Yekatit 12 hospital, Rasdesta memorial hospital, Tirunesh Beijing hospital, and Minlik II memorial hospital was selected for this study because they receive both trauma and non-trauma patients. Mahatma Ghandi memorial hospital was excluded due to it provides specialized care for Obstetrics & gynecology case. The five AA health bureau administered public hospitals have a total of 2960 health professionals. Out of this the emergency department of these hospitals has staffed with 86,68,40,61, and 80 health professionals working at the emergency unit of Zewuditu memorial hospital, Yekatit 12 hospital, Rasdesta memorial hospital, Tirunesh Beijing hospital, and Minlik II memorial hospital respectively. Health professionals who were working at the emergency unit comprise physicians, nurses, laboratory technicians, pharmacists, public health officers, radiology technicians, and midwives. All A.A health bureau hospitals have a disaster management committee in their hospitals.

4.3 Source population

All health professionals who were currently working at Addis Ababa health bureau administered public hospitals.

4.4 Study population

Health professionals working at the emergency unit of the randomly selected Addis Ababa health bureau administration public hospitals.

4.5. Inclusion and exclusion criteria

4.5.1. Inclusion criterion

All health professional who are working at the emergency department of selected hospitals.

4.5.2. Exclusion criteria

Health professionals who are absent during data collection, annual leave, and not willing to participate will be excluded.

4.6. Sample size determination and procedure

4.6.1 Sample size determination

The actual sample size for the study was determined by using the formula of a single population proportion formula. For population>10,000.

$$\mathbf{n} = \frac{(\mathbf{Z}\,\boldsymbol{\alpha}/\mathbf{2})^{\mathbf{2}} * \mathbf{p}\,(\mathbf{1}-\mathbf{p})}{\mathbf{d}^{\mathbf{2}}}$$

Where n = estimated sample size

Z = Confidence level (alpha, α)
P = prevalence
d = marginal error

To determine the sample size, the principal investigator used the following assumption;

The proportion of good knowledge of disaster preparedness is 50.8% was taken from a previous related study conducted at Tikur Anbesa specialized hospital in Addis Ababa (18), 95% confidence interval and 5% marginal error; the calculation results for sample size is 384 health professionals working at emergency unit based on the above formula.

Since the target population is <10,000 (that is 2960) finite correction factor formula is used to calculate the required sample size thus;

$$nf=\frac{n}{\left(1+\frac{n}{N}\right)}$$

where, nf= the desired sample size (when the population is less than 10,000)

n= the desired sample size (when the population is more than 10,000)

N=the estimate of the population.

The five AA health bureau hospitals' total health professionals are 2960 that receives from the five hospitals human resource manager office.

Thus;$$nf=\frac{384}{\left(1+\frac{384}{2960}\right)}$$

=340 and having (10%) of the sample be non-respondent then the total sample size could be;n*=340+340(0.1)=374 health professionals working at the emergency unit will be selected. This sample represents total populations.

4.6.2 Sampling procedure

From the six AA health bureau administered public hospitals, five hospitals were included in this study. Mahatma Ghandi memorial hospital will exclude in this study because it provides specialized care for obstetric and gynecologic cases. Out of the five AA health bureau administered hospitals, three hospitals were selected randomly by lottery method. These are Zewuditu memorial hospital, Minlik II memorial hospital, and Yekatit 12 hospital which has 86,80, and 68 health professionals working at their emergency unit respectively.

Table 4. 1:List of a randomly selected public hospital that included in the study with a number of health professionals working in the emergency department.

Name of hospital	Number of ED health professionals
Zewuditu Memorial Hospital	(86)
Menilik II Hospital	(80)
Yekatit 12 Hospital	(68)
Total	**(234)**

The calculated sample size (374 health professionals) was allocated to the randomly selected hospital emergency department, but the total number of randomly selected hospital emergency department health professionals (234) is less than the calculated sample size. Therefore, the PI would select all health professionals working at the ED of the randomly selected hospitals. So 234 health professionals(physicians, nurses, laboratory technicians, pharmacists, public health officers, radiology technicians, and midwives) were selected for this study from the three randomly selected hospitals.

4.7. Data collection tools

A standard semi-structured questionnaire was adopted from previous similar studies such as in central Saudi Arabia emergency department health professionals, Saudi Arabia nurses, Johannesburg health care workers, and Northern Kentucky University hospital emergency staff (3,32,33,35) and slightly modify it to the study area. The tool was also used in Pakistan emergency nurses, in Wisconsin (in the Midwest United States of America) emergency room health care workers. To the knowledge of the principal investigator, the tool is prepared in the English language. The reliability of the tool for this study was at Cronbach's alpha ‘’0.959’’. It has a total of seventy-five questions. Among these five open-ended questions, sixteen multiple-choice

questions, and fifty-four Likert scale response statements. The instrument comprises 5 sections. These are the following;

Section one: to assess socio-demographic data of respondents which contain a total of 7 questions. From these 2 multiple choices and 5 open-ended questions.

Section two: to assess participants' knowledge about disaster and emergency preparedness. The knowledge question comprises ten multiple-choice questions. From these 8 questions have yes, and no alternatives while the rest have two alternatives. Finally, the participants' knowledge median score was measured as good knowledge and poor knowledge who were scored >=50%and <50% knowledge questions respectively.

Section three: focus on participants' attitudes towards disaster /emergency preparedness, this section has 17 statements/attitude checklists. The statement includes participant attitude towards disaster/emergency plan and willingness to report in the event of infectious disease. These statements have Likert scale alternatives' on a scale of 1-5 points, where 1-very much disagree, 2-disagree, 3-not sure, 4-agree, 5-very much agree. Finally, the participants' attitude median score was measured as a negative attitude and positive attitude who was scored >=50%and <50% attitude statements respectively.

Section four: to assess participants' practices towards disaster/emergency preparedness comprises six multiple-choice questions. The question includes disaster drills performed at the department, first-aid training taking, involved in ongoing training, and disaster plan update. All these questions have '' done,'' and ''not done'' alternatives. Finally, participant's sum score was measured as adequate practice who was scored more than the median of practice questioners and inadequate practice who was scored less than a median of practice questioners.

Section five: to assess participants' familiarity with emergency preparedness by using a self-administered emergency preparedness information questionnaire (EPIQ), which is a reliable, valid, and has been employed in many studies. The questionnaire comprises 10 subsets with 39 familiarity response statements. These statements are categorized through a Likert scale as "not at all familiar", "slightly familiar", "somewhat familiar", "moderately familiar", "extremely familiar and scale is ranged from not at all familiar=1 to extremely familiar=5 point

4.8. Pre-test

Pretest in 10 % of the sample health professionals(on 23 health professionals) was done before the actual study by the principal investigator in St.Pauls hospital that is not included in the actual study to assess the content and approach of questionnaires.

4.9. Recruitment and training of data collectors

Before data collection, the principal investigator would select and train three data collectors and three supervisors for one day. The training sessions were included how to collect the data, how to communicate and approach with the respondents as well as the aim of the study, and contents of the tools. They were involved in collecting the data for a one-month duration from March 25-April 24, 2020.

4.10. Data collection procedures

During data, collection process lists of emergency unit health professionals were received from the personnel office of each selected hospital and all health professionals working at the emergency department was selected and each participant informed about the purpose of the study and how to answer and what is expected from them explained on the questionnaire and the self- administered questionnaire was distributed to study participant emergency unit health professionals while the study participants in the emergency room and then data collectors were collected the self-administered questionnaires. Finally, the data was checked by the data collectors for completeness. The principal investigator with the supervisor was closely supervised the overall activity during the data collection period.

4.11. Data quality control

To assure the quality of data questionnaires pretested prior to the actual study which helps to determine the appropriateness of questionnaires. Based on the pretested result correct unclear and vague issues on the questionnaires. At the time of data collection, all data collectors collect the data and rechecked for completeness of the questionnaire then principal investigator and supervisors made spot-checking and reviewing the completed questionnaires by the data collectors ensures completeness and consistency of the collected information.

4.12. Data processing and analysis

The collected data after checked, coded, entered to Epi-data version 4.6.2, validated, and compared to the original data, appropriate corrective measures were taken accordingly.After that data exported to the

Statistical Package for Social Science [SPSS] Version-23 software for analysis. During data analysis, bivariate, and multivariate analysis was employed.

Variables were computed and recoded through the transform function of SPSS. Descriptive analysis was done to compute proportions, mean, median, and standard deviations. Simple frequency, summary measures, tables, and figures were used to present the processed information.

knowledge of disaster/emergency preparedness was computed from summing up all relevant 17 multiple-choice items with a total of 21 multiple options, a correct option response was scored as "1" and incorrect option response was scored as "0" according to their response. Options were then summed up out of 21 and the median score was calculated. Accordingly, the median score was 10. Finally, those respondents who scored above-median were labeled as having good knowledge of disaster/emergency preparedness while the lower median score represents poor knowledge towards disaster/emergency preparedness.

Awareness about emergency preparedness information questionnaire was computed from summing up all relevant 39 familiarity statements a score of 1-5 was given according to their response and mean score items were then summed up out of 1,125. The mean score was calculated. Accordingly, the mean score was 2.64. Finally, those respondents who scored above-mean score were labeled as having an overall familiarity towards EPIQ while the lower mean score represents a un-overall familiarity towards EPIQ.

Attitude towards disaster/emergency preparedness was computed from summing up all relevant 17 attitude statements a score of 1-5 was given according to their response and items were then summed up out of 85. The median score was calculated. Accordingly, the median score was 55. Finally, those respondents who scored above or equal to median were labeled as having a positive attitude towards disaster/emergency preparedness while the lower median score represents a negative attitude towards disaster/emergency preparedness.

The practice towards disaster/emergency preparedness was computed from summing up all relevant 10 multiple-choice items with a total of 17 multiple options, a correct option response was scored as "1" and incorrect option response was scored as "0" according to their response and options were then summed up out of 17. The median score was calculated. Accordingly, the median was 3.Finally, those respondents who scored above or equal to the median score were labeled as having adequate practice towards disaster/emergency preparedness while the lower median score represents inadequate practice towards disaster/emergency preparedness.

On pearson chi-square test an association was observed among the socio demographic data, other selected variables and the level of KAP at p-value<0.05.

Bivariate analysis, crude odds ratio with 95% CI, at p-value <= 0.25 was estimated to see the crude association between each independent variable with the dependent variable by using binary logistic regression. All variables with P < 0.25 at a 95% confidence level during the bivariate analysis were included in the multivariate analysis to control all possible confounders. The multi co-linearity test was carried out to see the linear correlation among independent variables by using standard error. Standard error >2 was considered as suggestive of the existence of multi co-linearity. Therefore, variables with standard error >2 were checked to be dropped. Hosmer -Lemeshow goodness- of- fit was done to check model fitness during multivariable analysis. The omnibus test was significant (p-value <0.01) and Hosmer- Lemeshow's test was found to be insignificant (p-value >0.05) which indicates that the model was fitted.

Adjusted odds-ratio with 95% CI were estimated during multivariate analysis to identify factors associated with KAP towards disaster/emergency preparedness. Independent variables at the level of statistical significance P < 0.05 and which does not include null value in the 95% CI were reported as factors having a statistically significant association with the KAP of disaster/emergency preparedness.

4.13. Study Variables

4.13.1 Independent Variables

- Socio-demographic data (gender, age, educational status, year of experience, profession, working setting.)
- Organizational factors: disaster management plan, drills/simulation, training

4.13.2 Dependent Variables (outcome)

- Knowledge of disaster and emergency preparedness
- Attitude on disaster and emergency preparedness
- practice on disaster and emergency preparedness

4.14. Operational definition

Emergency preparedness-Preparedness for the first and immediate response (40).

Good knowledge - refers to respondents who have scored more than or equal to 50% for knowledge questions.

Poor knowledge - refers to respondents who have scored less than 50% for knowledge questions.

Negative attitude - represents those respondents who have scored less than 50% from attitude statements.

Positive attitude - indicates respondents who have scored greater than or equal to 50% for attitude statements.

Adequate practice- refers to all emergency health professionals, who score more than or equal to the median score for practice questioners

Inadequate practice- refers to all emergency room health professionals, who score less than the median score for practice questioners

Terms that describe disasters and large-scale emergencies are often used interchangeably, as we discuss disaster and we also discuss emergency (41).

Emergency exercises-are helping health personnel to familiarize themselves with current disaster plans, and procedures.

Workshop exercise-means an informal discussion designed to orient health professionals to new or updated disaster plan

Tabletop exercise- means involves key personnel discussing simulated scenarios in an informal setting which used to assess disaster plans /procedures

Drills-means a coordinated, supervised activity usually employed to test specific functions within a single entity.

4.15. Ethical Consideration

Ethical clearance and approval were obtained from the Ethical and Research Committee of the college of health science, Addis Ababa University. Official letters would be obtained from the department of emergency medicine and critical care nursing then the principal investigator was provided official letters to Addis Ababa public health research and emergency management directorate before the study and then ethical clearance would also be obtained from Addis Ababa public health research and emergency management directorate. After that PI would be given letters to the selected Addis Ababa health bureau hospitals. Participation would be voluntary and information would be collected anonymously after obtaining oral informed consent from each respondent by assuring confidentiality throughout the data collection period. Participants also would be told the objective of the study and their right to refuse to answer the questionnaires and would be given the right to stop or withdraw at any time of data collection. Confidentiality would be maintained by omitting their name and personal identification

5. RESULT

5.1 Socio-demographic characteristics of health professionals working at the emergency unit

A total of 225 health professionals participated in the study making a response rate of 96.2%. From this male to female ratio was 1.3:1. The mean age of the respondents was 29.48 years with SD of 6.34 years. The majority of the respondents 118(52.4%) were nurses and followed by physicians which were 63(18%).

Table 5. 1: Socio-demographic distribution of health professionals of AAHB hospitals, Addis Ababa, Ethiopia

Variable		frequency of Participant	Percent(%) of participant	Mean and SD
Gender	Male	128	56.9%	
	Female	97	43.1%	
Religion	Orthodox	154	68.4%	
	Catholic	8	3.6%	
	Muslim	31	13.8%	
	Protestant	27	12.0%	
	Other	5	2.2%	
Profession	Doctor	63	28%	
	Nurse	118	52.4%	
	Mid wife	28	12.4%	
	Others(lab,radiology,pharmacy public health officer)	16	7%	
Highest level education	Diploma	8	3.6%	
	Degree	188	83.6%	
	Post graduate	17	7.6%	
	Specialist	12	5.3%	
Age category	20-30 years	154	68.4%	29.48±6.34
	31-40 years	52	23.1%	
	‘’>’’40 years	19	8.4%	
Year of experience	‘’< ‘’one year	126	56%	1±2.77
	1-5 years	81	36%	
	‘’>’’5 years	18	8%	

5.2 Level of knowledge towards disaster, and emergency preparedness

147(65.3%) respondents knew the availability of disaster plan in their hospital whereas the rest of the respondents did not know their hospitals had a disaster preparedness plan. From those who knew the availability of disaster plans, only 81(36%)respondents knew where to find it. 81(36%)respondents said that the disaster plan found at the head nurse office, emergency outpatient department team office, and disaster committee office of the hospital.

More than half of 121(53.8%) respondents had knowledge about emergency /disaster exercises. The responders had an awareness for a workshop, tabletop , and other types of emergency/disaster exercises.

This study indicated that 96(42.7%) respondents did know their specific roles during disaster drills. Specific roles/activities mentioned by respondents were basic life support 54(24%), routine activities 18(8%), both basic life support and routine treatment14(6.2%), and 10(4.5%) were other activities (such as coordinating all activities, logistic supply, laboratory investigation, plus delivery of pregnant mother).

Generally, this study showed that more than half of the respondents 117(52%) had poor knowledge towards disaster/emergency preparedness whereas 108(48%) had good knowledge towards disaster/emergency preparedness based on the knowledge median score.

Table 5.2 1 Knowledge towards disaster preparedness

Variable	**Response**	
	Correct	Incorrect
Define disaster	165(73.3%)	60(26.7%)
Define disaster preparedness	132(58.7%)	93(41.3%)
	Yes	No
Know your hospital has disaster/emergency plan	147(65.3%)	78(34.7%)
In the last 12 months, have you seen any emergency/disaster drills	121(53.8%)	104(46.2)
Know alert status when emergency plan management activated	118(52.4%)	107(47.6%)
Know specific place for evacuation of the patient	126(56%)	99(44%)
Are you part of emergency response team	224(99.6)	1(0.4%)
Know new emergency code(nickname)	0	225(100%)
Know what emergency exercise	121(53.8%)	104(46.2%)

This study indicated that health professionals' overall awareness about emergency preparedness information questionnaire (EPIQ) the mean score was 2.64. 107(47.6%) respondents were familiar with EPIQ while 118(52.4%) were not familiar with the emergency preparedness information questionnaire (EPIQ).

Table 5.2 2 Awareness about EPIQ of health professionals at AAHB hospitals, Addis Ababa.

variable (EPIQ)	Not at all familiar	Slightly Familiar	Somewhat familiar	Moderately Familiar	Extremely Familiar	Mean±SD (2.64±0.86)
Detection and response to an event	23.17%	23.06%	24.50%	22.92%	6.35%	2.66±0.95
Incident Command System (ICS) and your role within it.	33.83%	25.73%	19.23%	14.97%	6.24%	2.34±1.07
Ethical Issues in Triage.	15.45%	25.33%	24.23%	27.22%	7.77%	2.87±1.05
Epidemiology and Surveillance.	26.24%	20.34%	26.44%	17.88%	9.10%	2.63±1.09
Isolation/Quarantine	20.25%	27.60%	23.35%	20.20%	8.60%	2.70±.12
Decontamination.	13.63%	22.83%	28.72%	23.10%	11.72%	2.96±1.09
Communication/Connectivity.	22.54%	27.04%	23.62%	19.13%	7.67%	2.62±.04
Psychological Issues	18.65%	27.55%	23.15%	23.55%	7.10%	2.76±1.19
Special Populations.	18.20%	27.55%	24%	24.40%	5.80%	2.72±1.11
Accessing Critical Resources.	28.60%	26.90%	24.60%	15.10%	4.80%	2.45±1.42
Overall Familiarity.	12.90%	32.90%	29.30%	21.30%	3.60%	2.70±1.06

5.2.1 Association between the level of knowledge and selected variables

This study result showed that level of knowledge had an association with the age category, with the type of profession, with the level of attitude, with the level of practice, and with the overall familiarity on Pearson Chi-square test at p-value=0.001,0.012, 0.005,0.000,and 0.002 respectively while the rest of the other socio-demographic variables had no significant association.

Out of variables that entered to multiple logistic regression age categories, profession, and level of practice had significantly associated with the level of knowledge towards disaster/emergency preparedness at p-value< 0.05. Health professionals in the age group between 31-40 years were 2.331 times more likely to be knowledgeable towards disaster/emergency preparedness when compared to health professionals in the age group 20-30 years(AOR:2.331, 95%CI(1.04,5.20). **(Table 5.2.1.1 as shown).**

Table 5.2.1 1.Bivariate and multivariable analysis with the level of knowledge towards disaster /emergency and preparedness and other selected variables among participants of AAHB hospitals, Addis Ababa.

Variables	Category	Level of knowledge		COR(95%CI)	AOR(95%CI)
		Poor Knowledge	Good knowledge		
Age category	20-30 year	92	62	1	1
	31-40 year	21	31	2.19(1.154,4.157)*	2.331(1.04,5.20)*
	>=41 year	4	15	5.56(1.764,17.556)*	
Level of education	Diploma				
	Degree			0.155(0.0.03,0.726)*	
	Postgraduate				
	Specialist			1	
Type of Profession	Physicia	22	41	5.56(2.62,6.73)*	
	Nurse	54	64	3.56(1.17,4.16)*	2.64(1.06,6.59)*
	Midwife	15	13		
	Others	12	4	1	1
Level of Practice	adequate practice	24	74	8.434(4.61,15.44)*	5.67(2.82,11.39)*
	inadequate practice	93	34	1	1

Note: statistically significant’’*’’ p-value<0.05, COR=Crude Odd Ratio, AOR=Adjusted Odd Ratio; CI= Confidence Interval

5.3 Level of attitude towards disaster, and emergency preparedness

The individuals who had un-favorable believe (disagree and very much disagree) that disasters are unlikely to happen in their hospital was 108(47.1%) while 55(24.4%) respondents were not sure. In terms of the profession who had the un-favorable attitude that disasters are unlikely to happen in their hospital were physician 43(68.3%), nurse 47(39.8%), midwife 11(39.3%) and others such as radiology, pharmacy, laboratory science and public health officer 5(31.3%).

142 (63.1%) of the respondents (25.8% very much agree and 37.3% agree) would be willing to report for duty when the hospital encounters infectious disease outbreak as a disaster. From this respondent, Specialists had the highest proportion of 11 (91.7%) of respondents followed by nurses 120 (63.8%) who would be willing to do so. While significant proportion 49(21.8%) of the health professionas were not willing to come to work during infectious disease outbreak as a disaster, 34(15.1%) were not sure whether or not they would come. The possible reason to be unwilling to report to duty during infectious disease outbreak because of afraid of diseases acquisition to self 49 (21.8%) and transmitting the disease to their family 72 (32%)''.

Generally, the median score of respondents for the attitude statement was 55. Based on this higher scores of median score represent a positive attitude while the lower scores of the median score represent a negative attitude towards disaster/emergency preparedness. Therefore, this study showed that 124(55.1%)of the respondents had a positive attitude towards disaster/emergency preparedness while 101(44.9%) respondents had a negative attitude towards disaster/emergency preparedness.

Table 5.3. 1 Attitudes of health professionals towards disaster /emergency preparedness at AAHB hospitals.

Statement	very much dis agree	disagree	not sure	Agree	very much agree
Hospital should be adequately prepared to manage any type of disaster	17(7.1%)	19(8.4%)	36(16.0)	63(28%)	90(40%)
The hospital should have disaster plan to manage any type of disaster	14(6.2%)	16(7.1%)	25(11.1%)	70(31.1%)	100(44.4%)
The hospital unlikely affected by disaster	42(18.7)	64(28.4%)	55(24.4%)	36(16%)	28(12.4%)
Disaster plan is only for the hospital administrative staffs	64(28.4%)	87(38.7%)	29(12.9%)	29(12.9%)	16(7.1%)
Disaster management is for nurses and doctors only	68(30.2%)	91(40.4%)	18(8%)	32(14.2%)	16(7.1%)
I need to know about disasters and disaster plans.	18(8%)	18(8%)	15(6.7%)	94(41.8%)	80(35.5%)
HP need training and education on how to manage pt during disaster	15(6.7%)	20(8.9%)	18(8%)	71(31.6%)	101(44.9%)
Hospital has an adequate staff compliment to deal with a disaster management	31(13.8%)	61(27.1%)	57(25.3%)	52(23.1%)	24(10.7%)
The hospital provides adequate personal protective equipment	57(25.3%)	54(24%)	33(14.7%)	44(19.6%)	37(16.4%)
Hospital should assess the importance of vulnerability	7(3.1%)	25(11.1%)	27(12%)	78(34.7%)	88(39.1%)
Hospitals should conduct regular drills on how to manage a disaster	28(12.4%)	32(14.2%)	89(39.6%)	22(9.8%)	54(24%)
Drills should be conducted in emergency department	14(6.2%)	15(6.7%)	38(16.9%)	81(36%)	77(34.2%)

Note: HP-Health professionals pt-patient

5.3.1 Association between the level of attitude and other selected variables

This research showed that there was an association on the Pearson chi-square test between age category, level of knowledge towards disaster preparedness, level of practice towards disaster preparedness, and an overall familiarity to EPIQ with the level of attitude at p-value=0.049, 0.005,0.031,and 0.031 respectively.

Out of variables that entered into multiple logistic regression only age category had significantly associated with the level of attitude towards disaster/emergency preparedness at p-value< 0.05. **(Table 5.2.2.1).**

Table 5.3.1 1: Bivariate and multivariable analysis with a level of attitude towards disaster/emergency preparedness and other selected variables among participant of AAHB hospitals, Addis Ababa

Variables	**Category**	**Level of attitude**		**COR(95%CI)** **at p.-value<0.25**	**AOR(95%CI)** **at p-value<0.05**
		Negative Attitude	Positive Attitude		
Overall familiarity to EPIQ	Overall familiar			1.793(1.05,3.054)*	
	Overall unfamiliar			1	
Level of knowledge	Good knowledge			2.149(1.26,3.67)*	
	Poor knowledge			1	
Level of practice	Inadequate practice			1	
	Adequate practice			1.806(1.05,3.09)*	
Age category	20-30 years	69	85	1	
	31-40 years	28	24	0.229(0.067,0.78)*	0.265(0.074,0.95)*
	>=40 years	4	15		1
Year of experience	Less than one years			1	
	1-5 years			2.02(0.746,5.468)*	
	>5 years				

Note: statistically significant’’*’’ p-value<0.05

5.4 Level of practice towards disaster, and emergency preparedness

61(27.1%) participants responded that disaster drills /simulations were done at their hospital. From those respondents, 50(22.2%) had drilled basic life support while 11(4.9%) of respondents had drilled advanced traumatic life support (ATLS). From those respondents drills were done in the last twelve months 26(11.6%) were doing one drill,31(13.8%) were doing two-four drills and 4(1.8%) were doing more than four drills.

Around one-third of respondents74 (32.9%) had participated in ongoing training in the hospital. The majority of study respondents 142(63.1%) disaster plan were not periodically updated while the remaining participants said that disaster plan periodically updated.

100(44.4%) of study participants had responded to a major emergency/disaster events in the last year in their hospitals. Most of the respondents 119(52.9%) had not taken first aid training such as basic life support in the previous year whereas the rest of the respondents (47.1%) had taken first aid training such as basic life support in the previous year. Out of who had taken first aid training respondents, 22.7% had taken first aid training in the one-sixth month of the last year whereas 24.4% had taken from the seven-twelve month of the last year.

To get the level of the practice, practice scores were calculated to report whether the participant has either correctly or incorrectly answered the questions of practice. Furthermore, the scores were categorized into levels depending on the median practice score. The median practice score was 3. Based on this, higher scores represent adequate practice while the lower scores represent inadequate practice towards disaster/emergency preparedness. Therefore, this research indicated that the majority of the respondents had inadequate practice127 (56.4%) towards disaster/emergency preparedness (described below paragraph 5.4.1

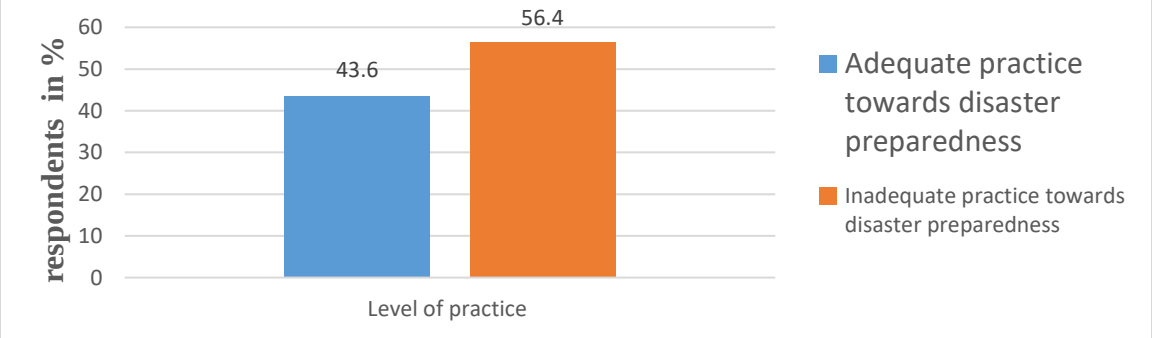

Figure 5.4. 1: Health professionals' levels of practice toward disaster/emergency preparedness at AAHB hospitals.

Table 5.4.1 1 practice towards disaster and emergency preparedness

Variables	*Response*	
	Done	Not done
1.Are disaster drills done at the ED of the hospitals	61(27.1%)	164(72.9%)
1.1 If done '' question No-''1'' ATLS drills done	11(4.9%)	50(22.2%)
1.2 If done '' question No-''1'' BLS drills done	50(22.2%)	11(4.9%)
2. In the last year, have you drilled on what to do in an emergency?	65(28.9%)	160(71.1%)
2.1 How many drills (simulations) have you undergone? If your answer done for 'question No-2 the following questions were responded		
''one'' drills done	26(11.6%)	39(17.3%)
''2-4'' drills done	35(15.6%)	30(13.3%)
>= 5 drills done	4(1.8%)	61(27.1%)
3. Have you participated in an ongoing training in the hospital?	74(32.9%)	151(67.1%)
4. Is the disaster plan periodically updated?	83(36.9%)	143(63.1%)
4.1. How often updated disaster plan?? If your answer done for 'question No-4 the following questions were responded		
4.1 Once a year	65(28.9%)	18(8%)
4.2 Two times per year	14(6.2%)	69(30.7%)
4.3 three times per year	4(1.8%)	79(35.1%)
4.4 Four times per year	0	83(36.9%)
5. In the last year, have you responded to a major emergency/disaster?	100(44.4%)	125(55.6%)
6. Have you taken first aid training such as basic life support in the previous year?	106(47.1%)	119(52.9%)
6.1. When was the last course? If your answer done for 'question No-6 the following questions were responded		
6.1 One-six month of the last 12 months	51(22.7%)	55(24.4%)
6.2 Seven-twelve months of the last 12 months	55(24.4%)	51(22.7%)

The sum of percentage may not be hundred

5.4.1 Association between the level of Practice and other selected variables

This study indicated that level of practice had an association with the age category, with the level of education, with the year of experience, with the level of knowledge towards disaster preparedness, and with the overall familiarity to EPIQ on the Pearson chi-square test at p-value<0.01.

Out of variables that entered into multiple logistic regression levels of knowledge, level of education, age category had significantly associated with the level of practice towards disaster/emergency preparedness at p-value< 0.05. **(Table 5.2.4.1).**

Table 5.4.1 2:Bivariate and multi-variable analysis with the level of Practice of disaster and emergency preparedness and other selected variables among participants of AAHB hospitals, Addis Ababa.

Variables	**Category**	**Level of Practice**		**COR(95%CI)**	**AOR(95%CI)**
		inadequate practice	Adequate Practice		
Overall familiarity to EPIQ	Overall familiarity			2.49(1.45,4.28)*	
	Overall unfamiliarity			1	
Level of knowledge	Good knowledge	34	74	8.438(4.61,15.44)*	5.69(0.002,0.71)*
	Poor knowledge	93	24	1	1
year of experience	< 1 year			1	
	1-5 years			2.068(1.17,3.65)*	
	> 5 years				
Level of education	Diploma	5	3	1	0.03(0.002,0.71)*
	Degree	116	72		0.04(0.003,0.49)*
	postgraduate	5	12		
	specialist	1	11	18.33(1.51,222)*	1
age category	20-30 year			1	
	31-40 year				
	>=41 year			3.49(1.26,9.68)*	
Level of attitude	negative attitude			1	
	positive attitude			1.81(1.05,309)*	

Note: statistically significant''*''p-value<0.05, ,COR=Crude Odd Ratio , AOR=Adjusted Odd Ratio ,CI= Confidence Interval

6. Discussion

In this study, an overall 48% of the health professionals had good knowledge of disaster and emergency preparedness. This finding was parallel with research conducted in southwest Ethiopia, where 48.1% of health professionals had good knowledge regarding the preparedness of disaster (16). However, the finding was lower than from the study conducted in Tikur Anbessa specialized hospital(TASH) **(**50.8%), and Pakistan (65.4%) (7,18). The possible reason for the difference might be health proffessionals working in the tertiary care hospitals expected to get better work experience sharing than those working in the health bureau hospitals.

In the present study, 34.3% of respondents didn't know that their hospitals had a disaster plan. This finding is comparable with the finding of the study conducted in Namibia on a Lutheran hospital 33% (28). But, the result of this study was much lower than a study done in Johannesburg hospital which showed that 92% aware their hospitals had a disaster plan (33). The deviation could be probably because AAHB hospitals didn't provide periodic disaster plan awareness creation to health professionals.

This study result revealed that respondents who had adequate practice towards disaster /emergency preparedness were around six times more likely to be knowledgeable about disaster/emergency preparedness than those who had inadequate practice towards disaster preparedness.This finding supported by a similar study done in Johannesburg hospital which showed that previous exposure to disasters could influence how effectively and efficiently health professionals handle disastrous events (33).

In the present study, participant's age found influence the level of knowledge which showed that health professionals aged 31-40 years old were around two times more likely to be knowledgeable towards disaster/emergency preparedness than their counter parts. These findings confirmed the findings of research done in Kenyatta National hospital (38).

Further more, nurses were around three times more likely to had better knowledge than others(laboratory technicians, pharmacy, radiology) towards disaster/emergency preparedness.This result is supported by research done in Kenyatta National hospital (38). This might be due to the hospital system and nurses got more training than others.

The mean score of overall awareness of health professionals about EPIQ in the current study was 2.64±0.86. This result was much lower than other similar study reported in Saudi Arabia, 2.87± 0.84 (35). The possible reason might be due to in AAHB hospitals conducted insufficient disaster-related training, exercises(workshop, tabletop)than Saudi Arabia as well as there might be curriculum difference.

The present study revealed that 55.1% of respondents had a positive attitude towards disaster and emergency preparedness. This result was lower than with the finding of a study conducted in TASH (64.8%) (18). The possible reason for this disparity might be negligence of health professionals in the health bureau hospitals towards disaster than TASH health professionals.

In the current study, 39.1% of health professionals highly agreed on the importance of vulnerability assessment at the hospital whereas 3.1% of respondents highly disagreed. This result was much lower than the finding of the study done in TASH that 69.1% of respondents strongly agreed (18). This deviation might be rationalized the misunderstanding of the scope of the disasters by health professionals working in the AAHB hospitals.

Besides, 21.8% of the health proffessionals were not willing to come to work during an infectious disease outbreak as a disaster since they afraid of diseases acquisition to self and transmitting the disease to their family. This study finding was comparable with the finding of the study conducted in Namibia by which 22.6% respondents were not willing to come during an infectious disease outbreak for a similar reason (28).

This study result also showed that the level of attitude towards disaster preparedness had an association with the level of knowledge. This finding was in line with the finding of the study done in Malaysia where the highest percentage of nurses who had a positive attitude regarding emergency management plan had good awareness (36). However, the present study result was inconsistent with the finding of the study done in Nambia that despite the poor knowledge about the disaster plan, the health professionals had a positive attitude towards hospital emergency and disaster preparedness (28).

In this study finding,43.6% respondents had adequate practice towards disaster and emergency preparedness. This finding was more than five times higher than the study conducted in TASH(8.3%) (18). The discrepancy might be due to the enhanced contribution of different mass media, and due to the increasement of adverse situations through times which leads that hospital tries to cope with this situation by providing disaster-related drills to their health professionals these days.

Moreover, health professionals who had adequate knowledge towards disaster preparedness were around six times more likely to practice disaster /emergency preparedness when compared to their counterparts. This finding was comparable with the finding of a similar study done in one referral hospital in Rwanda and National Kenyatta hospital (34,38)

This study also found that the level of education influences practice. Specialists were 97% times more likely to practice disaster/emergency preparedness than diploma holder health professionals and 96% times more likely to influence than degree holders. This finding was supported by the finding of a similar study done in National Kenyatta hospital (38).

7. Limitation of the Study

The study was conducted only in AAHB administered hospitals it did not include other governmental and private hospitals. The other limitation of this study was not included the supportive staff of the hospital.

8. Conclusion and Recommendation

8. 1 Conclusion

Although the poor knowledge and inadequate practice of respondents about the disaster as well as emergency preparedness, the health professionals had a positive attitude towards hospital emergency and disaster preparedness. The majority of staff had less than one year of experience in the emergency unit.

A significant proportion of the respondents did not know about the hospital had a disaster plan. More than half of the respondents knew the different types of emergency exercises. The overall familiarity of the staff towards EPIQ was low. Around one-third of the participants were done disaster drills, and participated in ongoing disaster-related training in the hospital. A significant proportion of health proffessionals were not willing to come to work during an infectious disease outbreak as a disaster since they afraid of diseases acquisition to self and transmitting the disease to their family.The age of the participants had an association with knowledge and attitude towards disaster /emergency preparedness. The level of knowledge and educational level of the respondents had positively influency practice of health professionals towards disaster/emergency preparedness.

8.2 Recommendation

Based on the finding of the current study Principal Investigator recommended the following concerned stakeholders.

To the Federal Ministry of Health and Ministry of education

It is better to incorporate some educational programs and training practices about the disaster and emergency preparedness to be placed in all health professionals' curriculum.

To the Addis Ababa health bureau

Adds Ababa health bureau had better to adjust programs and give direction for all their hospitals towards training provision on disaster and emergency preparedness.

To the Adds Ababa health bureau hospitals

It had better to enhance more continual ongoing disaster and emergency related training opportunities for health professionals and look for the adequacy of their preparations by doing frequent large scale simulations, as well as familiarizing health professionals to disaster/emergency preparedness through different exercises (workshops, tabletop), and, drills and made experience sharing between the different

Hospitals. Hospitals better to provide adequate PPE and waiting room(house)to the staff during an infectious disease outbreak.

Hospital disaster committee and emergency case team office had better improve the KAP of the emergency staff towards disaster/emergency preparedness placed hospital disaster plan where health professionals easily access them. Health professionals working at the emergency unit had not better to rotate to other units within a short period.

To staff

Every health professionals member of the emergency unit had better know about disaster plans, their roles, and their responsibilities during a drill.

To Addis Ababa public health research and emergency management directorate office

It had better to do further follow up observational research is necessary for maximizing KAP of health professionals towards disaster and emergency preparedness.

9. Dissemination of the research results

The study result would be presented to Addis Ababa University, College of health science, department of emergency medicine, and critical care and the document would be disseminated to Addis Ababa public health research and emergency management directorate. Furthermore, the finding would be presented on appropriate seminars, conferences, and workshops and would be published with scientific journals.

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Annex

Annex I: Informed Consent

Dear Participant;

Introduction

My name is **Melkie Ambaw** a post-graduate student pursuing a Master's degree in Emergency and Critical Care Nursing, department of Emergency medicine at the University of Addis Ababa. As one of the requirements for completion of this program, I am required to conduct a study in the Addis Ababa health bureau administered public hospital emergency department.

Aim

The purpose of my study is to assess the knowledge, attitude and practice of health professionals working at the emergency unit towards disaster and emergency preparedness at Addis Ababa health bureau administration public Hospitals, Addis Ababa, Ethiopia 2020.

Procedure

Your selection to participate in this study is because you are a key person in disaster and emergency preparedness in this department. I wish to request you to kindly allow me to take some of your time to answer this questionnaire. If you agree to participate in the study, I shall issue you with a questionnaire with semi-structured questions. Totally you have the right not to answer the question or withdraw at any time if you are not comfortable. You are free to ask questions to clarify any of the aspects.

Risks

There are no economic, professional or physical risks to participating in the study. However, you will take some time off your schedule approximately 20-25 minutes to respond self-administered questionnaire from the data collector.

Benefits

There is no direct financial benefit in participating in this study. However, the results of the study will be useful in facilitating the understanding of the emergency room health professional’s knowledge, attitude and practice towards disaster and emergency preparedness.

This will lead to making the necessary interventions, and therefore improve health professional's knowledge, attitude and practice towards disaster and emergency preparedness.

Confidentiality/Privacy

The information you give in this study will be treated with utmost confidentiality during the study and thereafter. Your name will not be recorded anywhere. None of the information you give will be linked to you and it will only be used for the intended purpose.

Right to Refuse or Withdraw

Your participation in this study is voluntary. You are free to decline to participate in this study or withdraw at any point. You are free not to answer any questions that you are not comfortable with. Refusing to participate or withdrawing from the study will not be used in any way to interfere with your constitutional rights.

Persons to contact in case of any complaints on any aspect of this study, kindly contact:

Name Melkie Ambaw.

Phone no: 0918317337

Email address: melkieambaw19@gmail.com

Consent Form

If you Consent to Participate in the study please sign below: I hereby consent to participate in this study. I have been informed of the nature of the study being undertaken and the potential risks explained to me. I also understand that my participation in the study is voluntary and the decision to participate or not to participate will not affect my employment status at this facility in any way whatever. I may also choose to discontinue my involvement in the study at any stage without any explanation or consequences. I have also been reassured that my personal details and the information I will relay will be kept confidential. I confirm that all my concerns about my participation in the study have been adequately addressed by the investigator and the investigator has asked me questions to ascertain my comprehension of the information provided.
Participant's Signature_____Date_____

I confirm that I have clearly explained to the participant the nature of the study and the contents of this consent form in detail and the participant has decided to participate voluntarily without any coercion or undue pressure.

Investigator Signature……Date.……...

Tel; 0918317337 Thank you very much for your time.

Annex II: Questionnaire

PART **One: Socio-Demographics Information**

Instruction: to complete the questionnaire, kindly place a cross in the appropriate block or complete where necessary.

1.1 What is your gender?	□ Male □ Female
1.2 What is your religion?	…….
1.3 What is your age?	…….years
1.4 working place hospital	……..
1.5 What is your profession category?	……..
1.6 What is the highest level of education that you have completed?	□ Certificate □ Diploma □ Degree □ Postgraduate Degree(master's degree) If other specify …….
1.7 How many years have you worked in the emergency room?	----------

PART **Two: Knowledge, attitudes, and practices regarding disaster preparedness**

2.1 Knowledge regarding disaster/emergency preparedness

Multiple choices

1. **What is a disaster? (Only one answer)**

A. aserious disruption of the functioning of a community causing widespread human, material, economic or environmental losses which exceed the ability of the affected community to solve using its own resources

B. a possible threat of source of exposure to injury, harm or loss

2. **What is disaster preparedness? (Only one answer)**

A. System of procedures, checks, audits and corrective actions to ensure that all testing, sampling, analysis, monitoring and other technical and reporting activities are of the highest achievable quality.

B. The process through which all the activities, and measures taken in advance of an event to ensure an effective and coordinated response to the effects of the hazards.

Instruction: kindly place encircle in the appropriate block or complete when a necessary

question	Response	
1. Do you know that your Hospital has an emergency /disaster plan?	□ Yes	□No (Please skip questions 1.1 and no 2)
1.1. Have you seen the plan?	□ Yes	□ No
2. Do you know where to find a copy of the plan in the department?	□ Yes	□No (Please skip question 2.1)
2.1. Where? Please state on the provided space	……	
3. In the past year, have you seen any emergency/disaster drills occurring in your hospital?	□ Yes	□ No (Please skip the question no 3.1_to_3.3)
3.1. Do you know staff members will know their functions during a drill?	□ Yes	□ No
3.2 Do you know your role?	□ Yes	□ No
3.3 if yes question ''3.2''what was?	☐ routine treatment of the victims ☐ provides basic life support ☐ If others specify…….	
4. Do you know when an alert status for an emergency management plan in your hospital is activated?	□ Yes	□ No

5. Do you know the specific place for evacuation for patients during disastrious event ?	□ Yes	□ No
6. Are you a part of the emergency response team?	□ Yes	□No (Please skip question 6.1)
6.1 What team do you belong to?	☐ medical team ☐ emergency medical service ☐ Other……..	
7. Do you know that there is a new emergency code designation(Nickname) in your hospital?	□ Yes	□No (Please skip the question 7.1)
7.1 What is it? Please place the code name beside each.	Trauma Patient Arrival…..... Trauma Team Activation…….. Security……. Fire…… Cardiac arrest…… If other specify_____	
8. Do you know what emergency exercises are?	□ Yes	□No (Please skip a question 8.1)
8.1 What types of emergency exercises? (Encircle more than one answer)	□.Workshop □.Tabletop □.other……	

3.2 Attitudes regarding disaster/emergency preparedness

3.2.1 Kindly place **a cross(x mark)** in the appropriate block where how much you agree with the following statements.

Statements	Response				
	very much disagree	disagree	not sure	agree	very much agree
1. The hospital should adequately prepared to manage any type of disaster emergency in which there is a sudden arrival of patients.					
2. Drills should be conducted in the emergency department					
3. The hospital should have disaster plans, to manage situations in which there is a sudden large influx of patients.					
4. hospital should asses the importance of vulnerability					
5. The hospital is unlikely to be affected by disasters					
6. Disaster planning is only for the hospital's administrative staff and heads of departments					
7. Disaster management is for nurses and doctors only					
8. I need to know about disasters and disaster plans.					
9. Health professionals need training and education on how to manage patients during disasters in which there is a large influx of patients					
10. The hospital has an adequate staff compliment to deal with a sudden large influx of patients during disasters/emergencies.					
11. Hospitals should conduct regular drills on how to manage a sudden, large number of patients during emergencies/disasters.					
12. The hospital provides adequate personal protective equipment for staff members during infectious disease outbreaks.					

3.2.**2 Willingness to report in the events of infectious disease outbreak**

Instruction: Kindly place **a cross(x mark)** in the appropriate block where how much you agree with the following statements.

Statements	Response				
	very much disagree	disagree	not sure,	Agree	very much agree
1. I am willing to work even if I am at risk of contracting the disease					
2. I am confident that the hospital will offer me adequate protective measures to reduce the risk of transmitting the disease.					
3. I am afraid that if I do not come to work, I will lose my job.					
4. I will not report for duty because I am afraid of falling ill.					
5. I will not report for duty because I am afraid of spreading the disease to my family and friends					

3.3 Regarding practices on disaster /emergency preparedness

Instruction: Please encircle your answer honestly.

1. Are disaster drills (simulations) done at the department of emergency health professionals'?	Response	
	□ Done	□Not Done (Please skip question 1.1)
1.1. What type of drills is done? Please state.	……	
2. In the last year, have you drilled on what to do in an emergency?	□ Done	□Not Done (Please skip question 2.1)
2.1 How many drills (simulations) have you undergone? Please state on the provided space.	……	
3. Have you participated in an ongoing training in the hospital?	□ Done	□ Not Done
4. Is the disaster plan periodically updated?	□ Done	□Not Done (Please skip question 4.1)
4.1. How often updated disaster plan?	□ Once a year □. Two times per year □. three times per year □ four times per year	
5. In the last year, have you Responded to a major emergency/disaster?	□ Done	□ Not Done
6. Have you taken first aid training such as basic life support in the previous year?	□ Done	□not-done (please skip question 6.1)
6.1. When was the last course? Please state on the provided space.	……	

PART IV: **Familiarity With Emergency Preparedness Terms and Activities Instruction: please ‘’x’’ Mark on your answer on the provided space where how much you are familiar with the following statements.**

4.1 Detection of and Response to an Event

Description	Response				
	Not at all familiar	Slightly Familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
1.Signs/symptoms of exposure to different biological agents					
2. Modes of transmission for different types of biological agents (i.e. anthrax, smallpox, etc.)					
3.Match antidote and prophylactic medications to specific biological/chemical agents					
4. Basic first aid in a large-scale emergency event					
5. How to evaluate the effectiveness of your own actions during a large-scale emergency event					

4.2 The Incident Command System (ICS) and Your Role within It

Description	Response				
	Not at all familiar	Slightly Familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
6. The content of the emergency operations plan in your hospital					
7. To which functional group in the Incident Command System (ICS) you would be assigned during a large-scale emergency event					
8. The physical location where you would report to if a large-scale emergency event occurred					
9. Assess and respond to site safety issues for self, co-workers, and victims during a large-scale emergency event					
10. The strategic rationale used to develop the ICS action plan					
11. Your hospital's preparedness level for responding to a large-scale emergency event					
12.Differences between decision-making processes in the Incident Command System for a large scale emergency event and non-emergency situations					

4.3 Ethical Issues in Triage

Description	Response				
	Not at all familiar	Slightly familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
13.How to perform a rapid physical assessment of a victim of a large-scale emergency event					
14. How to perform a rapid mental health assessment of a victim of a large-scale emergency event					
15. How to assist with triage in a large-scale emergency event					
16. General issues related to the proper handling of the dead during a large-scale emergency event (ethical, legal, cultural, and safety)					

4.4 Epidemiology and Surveillance

Description	Response				
	Not at all familiar	Slightly familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
17.History and physical assessment surveillance data for creating a high index of suspicion that a patient has been exposed to a Category A, B, or C biological agent					
18. When to report an unusual set of symptoms to an epidemiologist					
19. Diseases that are immediately reportable to state health departments					
20. Ability to identify the exacerbation of an underlying disease due to exposure to a chemical or biological agent, or to radiation					

4.5 Isolation/Quarantine

Description	Response				
	Not at all familiar	Slightly Familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
21. Isolation procedures for persons exposed to biological or chemical agents					
22. Your hospital's quarantine process					

4.6 Decontamination

Description	Response				
	Not at all familiar	Slightly familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
23. Selection of the appropriate personal protective equipment when caring for patients exposed to a biological, chemical, or radiological agent					
24. The decontamination procedures stated in the hospital's emergency operations plan					
25. The impact on the environment from a large-scale emergency event					

4.7 Communication/Connectivity

Description	Response				
	Not at all familiar	Slightly familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
26. The procedures used to document the provision of care in a large-scale emergency event					
27. Chain of Supervision during a large-scale emergency event					
28. Procedures for communicating critical patient information to those transporting patients					
29. Effectively present information about the degree of risk to various audiences					
30. Identify the different abilities of key partners in your emergency operations plan					
31. Appropriate managing activities following a large-scale emergency event					
32. Use of all types of communication devices (phone, fax, email)					

4.7 Psychological Issues

Description	Response				
	Not at all familiar	Slightly familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
33. Appropriate psychological support for all patients involved in a large-scale emergency event					
34. Provide health counseling to patients regarding the long-term impact of biological, nuclear, flammable) agents					

4.8 Special Populations

Description	Response				
	Not at all familiar	Slightly Familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
35.Procedures for providing care to children during a large-scale emergency event in cases where prior consent from parent/legal guardian is not possible					
36.The appropriate care of vulnerable patient groups(aged, pregnant women, and the disabled) during a large-scale emergency					

4.9 Accessing Critical Resources

Description	Response				
	Not at all familiar	Slightly familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
37. During an event, where to quickly access up-to-date resources about specific biological, nuclear, chemical, explosive agents					
38. Determine the appropriate agency to which reportable diseases are to be directed					

4.10 OVERALL FAMILIARITY

Description	Response				
	Not at all familiar	Slightly Familiar	Somewhat Familiar	Moderately familiar	Extremely Familiar
39.overall familiarity with response activities/preparedness in the case of a large-scale emergency					

THANK YOU VERY MUCH!!!